

Bureau of Reclamation  
Mid-Pacific Region

California Department  
of Water Resources

# Upper San Joaquin River Basin Storage Investigation

## Workshop 1

May 29, 2002

# Agenda

- ◆ Welcome and Introductions – Bill Luce and Mark Cowin
  - ◆ Workshop Purpose and Ground Rules – Charles Gardiner
  - ◆ Investigation Overview – Jason Phillips
  - ◆ Participant Roles – Coral Cavanagh
  - ◆ Phase I Approach – Bill Swanson
  - ◆ Lunch
  - ◆ Planned Technical Activities
    - Modeling – Yung-Hsin Sun
    - Engineering – David Rogers
    - Environmental – Bill Swanson
  - ◆ Next Steps and Meeting Review
-

# Workshop Purpose

- ◆ **First Workshop**
    - **Introductory Presentations and Discussion**
  - ◆ **Project Overview**
    - **CALFED Context**
    - **Planning Objectives and Roles**
    - **Planned Activities and Schedule**
  - ◆ **Initial Input**
    - **Problems to Address**
    - **Process and Roles**
-

# Workshop Ground Rules

- ◆ **Commit to Being Fully Present**

- No cell phones, pagers, voicemail, etc.
- Ask for what you need from the meeting process and participants

- ◆ **Honor Our Time Limits**

- Keep comments and discussion concise
- Stay focused on the topic – Use the parking lot for other issues

- ◆ **Respect Each Other**

- Listen carefully to other team members
- Respond to ideas and issues, not individuals

- ◆ **Support Constructive Discussion**

- Suggest improvements and solutions
- Build on others' ideas – Use “and” instead of “but”

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# INVESTIGATION OVERVIEW

- ◆ Background
  - ◆ Investigation Focus
  - ◆ Relationship to Other Projects and Programs
  - ◆ Investigation Schedule
-

# CALFED PROGRAMS

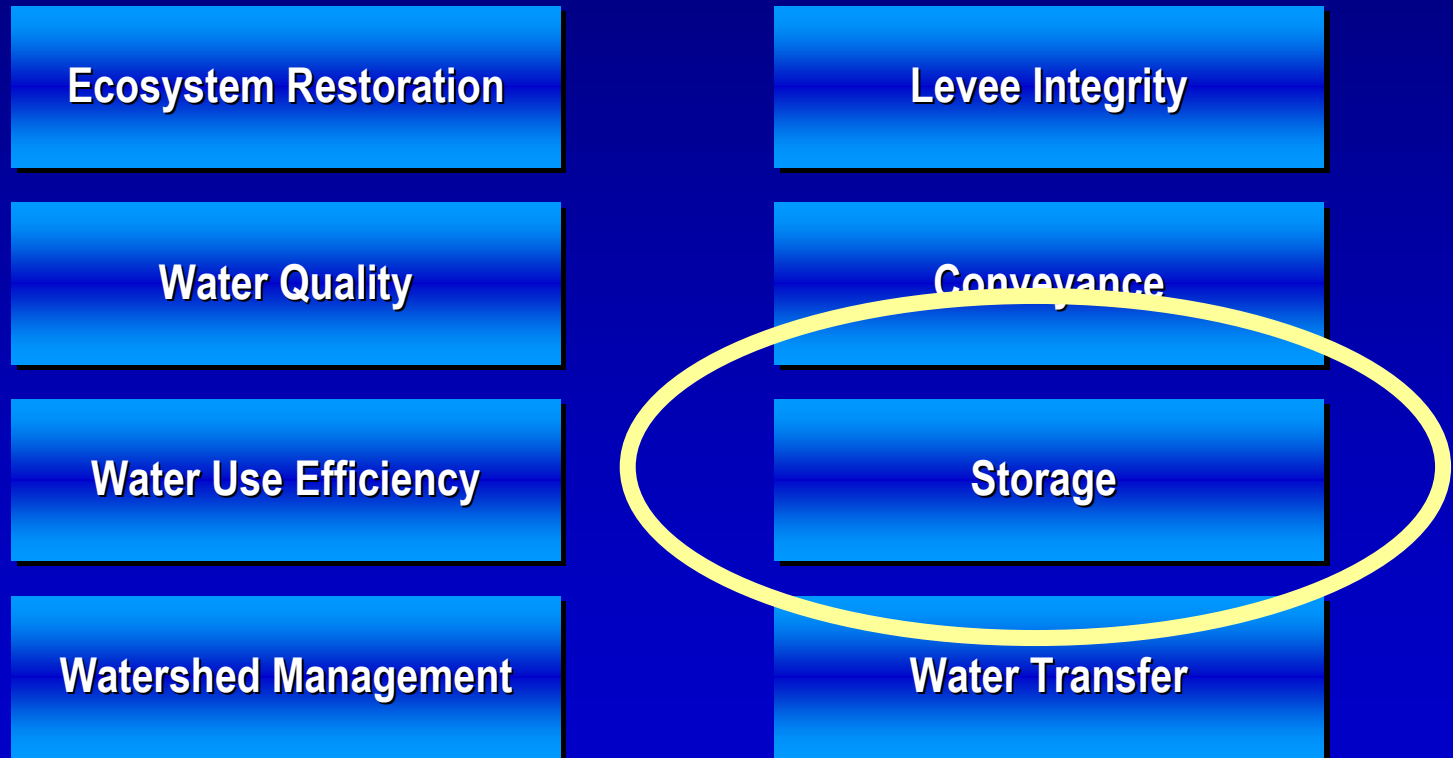
## Overview

*“Develop a long-term comprehensive plan that will restore ecological health and improve water management for beneficial uses of the Bay-Delta system.”*



# CALFED PROGRAMS

## Programs Established in Record of Decision





# **CALFED PROGRAMS**

## **Goals of Storage Program**

- ◆ **Improve water supply reliability**
- ◆ **Provide water for environmental needs**
- ◆ **Provide flows timed to maintain water quality**
- ◆ **Protect levees through coordinated operations with flood control reservoirs**

# CALFED PROGRAMS

## Storage Options

- ◆ **Surface storage projects to be pursued**
  - In-Delta storage
  - Expand Shasta Reservoir
  - Expand Los Vaqueros Reservoir
- ◆ **Surface storage requiring further consideration**
  - Sites Reservoir
  - Additional storage in Upper San Joaquin watershed
- ◆ **Groundwater storage and conjunctive use**
- ◆ **Groundwater management**

# UPPER SAN JOAQUIN RIVER BASIN STORAGE INVESTIGATION – Objectives that May Be Addressed by Increasing Storage

- ◆ Contribute to restoration of San Joaquin River
- ◆ Improve water quality in San Joaquin River
- ◆ Improve water quality of urban deliveries
  - Facilitate conjunctive water management and water exchanges
- ◆ Assist in solving other regional problems



# UPPER SAN JOAQUIN RIVER BASIN STORAGE INVESTIGATION – Measures Considered

- ◆ Enlarge existing storage facilities
  - ◆ Add new surface storage
  - ◆ Expand conjunctive management
-

# UPPER SAN JOAQUIN RIVER BASIN STORAGE INVESTIGATION – Relationships to Other Programs

- ♦ Interaction with Other CALFED Programs
    - Other Surface Storage Investigations
    - Conjunctive Management Investigations
    - Other CALFED Programs
-

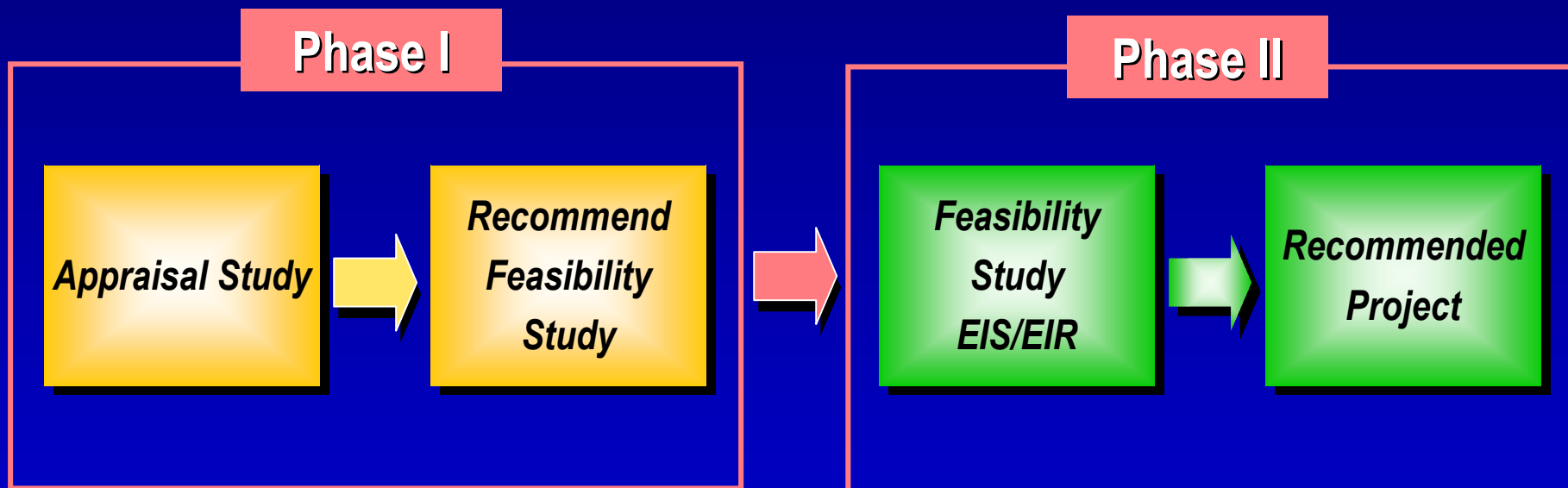
# UPPER SAN JOAQUIN RIVER BASIN STORAGE INVESTIGATION – Relationships to Other Programs

- ◆ **San Joaquin River Restoration Water Supply Plan**
  - FWUA/NRDC ongoing study
  - USJRBSI will focus on storage, which is a portion of options identified in San Joaquin River Restoration Water Supply Plan
  - USJRBSI will review and incorporate technical work and applications, where available
  - USJRBSI has broader goals, alternatives focused on new storage

# UPPER SAN JOAQUIN RIVER BASIN STORAGE INVESTIGATION – Relationships to Other Programs

- ◆ **Sacramento and San Joaquin River Basins Comprehensive Study (USACE/Rec. Board)**
  - Shares some objectives with USJRBSI
  - May result in projects that would benefit both programs
- ◆ **CVP Yield Replacement**
- ◆ **Others (e.g. VAMP)**

# UPPER SAN JOAQUIN RIVER BASIN STORAGE INVESTIGATION – A Two-Phase Investigation Approach





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# Roles

- ◆ **Stakeholder Participants**
  - Local Expertise and Input
- ◆ **Planning Team**
  - Provides Opportunities to Participate
- ◆ **What You Can Expect**
  - Interaction
  - Information
- ◆ **What We Ask From You**
  - Principles of Participation
    - ◆ Attend, Share Ideas, and Learn
  - Comments and Suggestions

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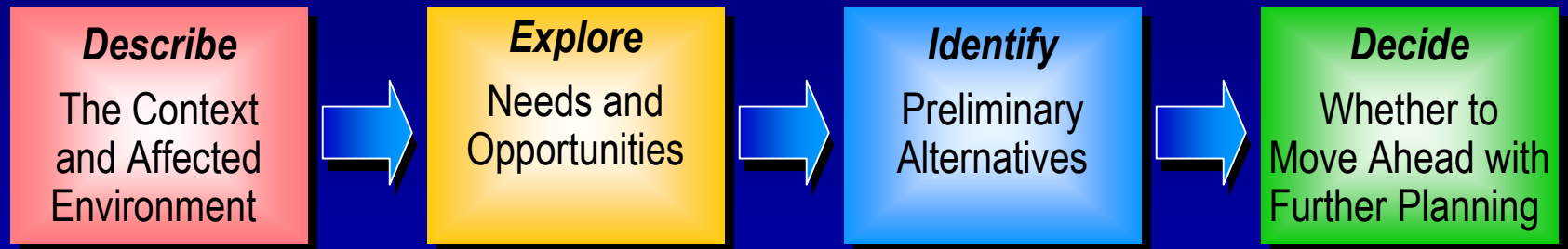
# PLANNING APPROACH

## Focus of the Phase I Investigation

- ◆ Consider increasing water supplies through the enlargement of Millerton Lake or a functionally equivalent storage program
- ◆ Coordinate with other Federal, State, and Regional programs and projects
- ◆ Recommend continued study
  - If a Potential Project appears viable
  - With Federal and State interests
  - With identified potential project partners
- ◆ Define scope of feasibility study and impact analysis

# PLANNING APPROACH

## Phase I Approach



- Problems
  - Objectives
  - Constraints
  - Existing Conditions
  - Future Conditions
- Opportunities
  - Management Measures
  - Test for Functional Equivalence
- Preliminary Alternatives
  - Applying Continuation Criteria

# PLANNING APPROACH

## Problems – Local and Regional

- ◆ Water Supply
- ◆ Ecosystem Conditions
- ◆ Operational Flexibility
  - Conjunctive Management
  - Water Exchanges

# PLANNING APPROACH

## Problems – State-wide

- ◆ Water Supply
  - ◆ Ecosystem Conditions
  - ◆ Delta Water Quality and Quantity
  - ◆ CVP/SWP Operational Flexibility
-

# PLANNING APPROACH

## Planning Objectives – Local and Regional

- ◆ **Increase Water Supply**
  - River Restoration
  - Conjunctive Management
  - Water Exchanges



# PLANNING APPROACH

## Planning Objectives – State-wide

- ◆ **Contribute to State Water Supply**
  - Delta Water Quality and Quantity
  - CVP/SWP Operational Flexibility
- ◆ **Contribute to State Ecosystem Restoration**

# PLANNING APPROACH

## Planning Constraints

- ◆ **Authorities, Regulations, Programs, and Groups**
  - Federal authorities and regulations
  - State authorities and regulations
  - Regional and local MOUs and agreements
- ◆ **Guidance Tool – Understand how these constraints may affect investigation**

# PLANNING APPROACH

## Planning Constraints – Examples

- ◆ **Federal authorities and regulations**
  - CVPIA, NEPA, etc.
- ◆ **State authorities and regulations**
  - Area-of-Origin Statutes, CEQA, etc.
- ◆ **Regional and local MOUs and agreements**
  - San Joaquin River Management Agreement, Mammoth Pool Agreement, etc.

# PLANNING APPROACH

## Define Existing Conditions

- ◆ **Historic and Current Water Uses**
  - Hydrology
  - CVP Contracts
  - Facility Operations
- ◆ **Environmental Issues**
  - Regulatory Requirements
  - Existing Habitat
  - Cultural Resources
  - Recreation

# PLANNING APPROACH

## Define Future Without-Project Conditions

- ◆ Planning Horizon
- ◆ Future Water Demands
  - Irrigation
  - Municipal & Industrial
  - Restoration
- ◆ Other CALFED or Local Programs

# PLANNING APPROACH

## Management Measures to be Considered

- ◆ **Surface Storage**

- Enlarge Conservation Storage in Existing Facilities
- Construct New Surface Storage

- ◆ **Conjunctive Management**

- Enhance Existing Conjunctive Management
  - Initiate New Conjunctive Management
-

# PLANNING APPROACH

## Qualifying Criteria for Management Measures

- ◆ **Contribute to CALFED Objectives**
  - Address Regional Problems
  - Contribute to State-Wide Needs
- ◆ **Contribute to Other Objectives**
- ◆ **Functional Equivalence**

# **PLANNING APPROACH**

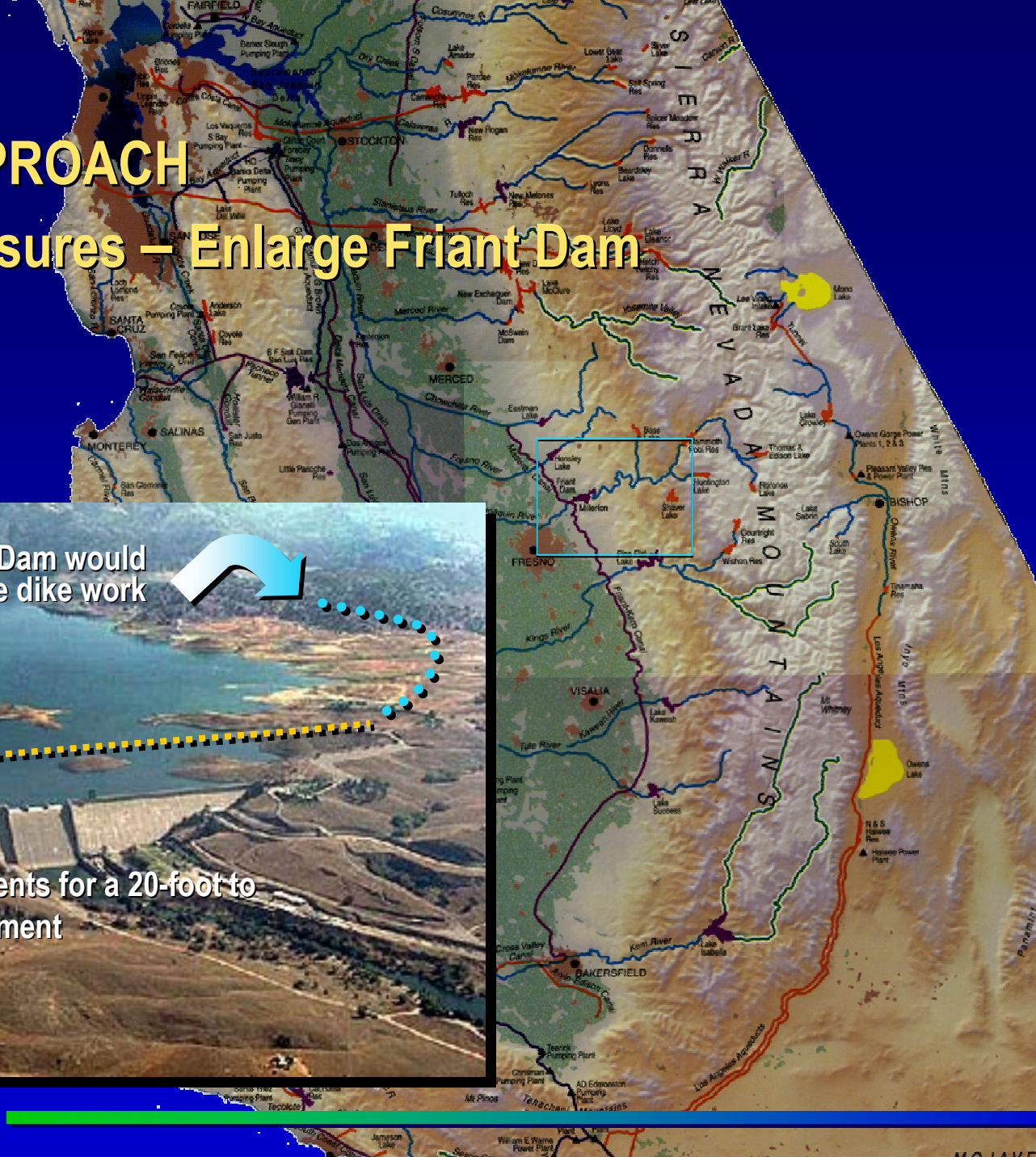
## **Defining Functional Equivalence**

- ◆ **Potential Accomplishments of Enlarged Millerton Lake**
  - **Restoration Water Supply**
  - **Enhanced Conjunctive Management**
  - **Enhanced Water Exchanges**
  - **Increased Flood Protection**
  - **Hydropower Generation**
  - **Recreation**
- ◆ **Stakeholder Participation to Identify Ranges**



# PLANNING APPROACH

## Example of Measures – Enlarge Friant Dam





# PLANNING APPROACH

## Other Potential Storage Measures

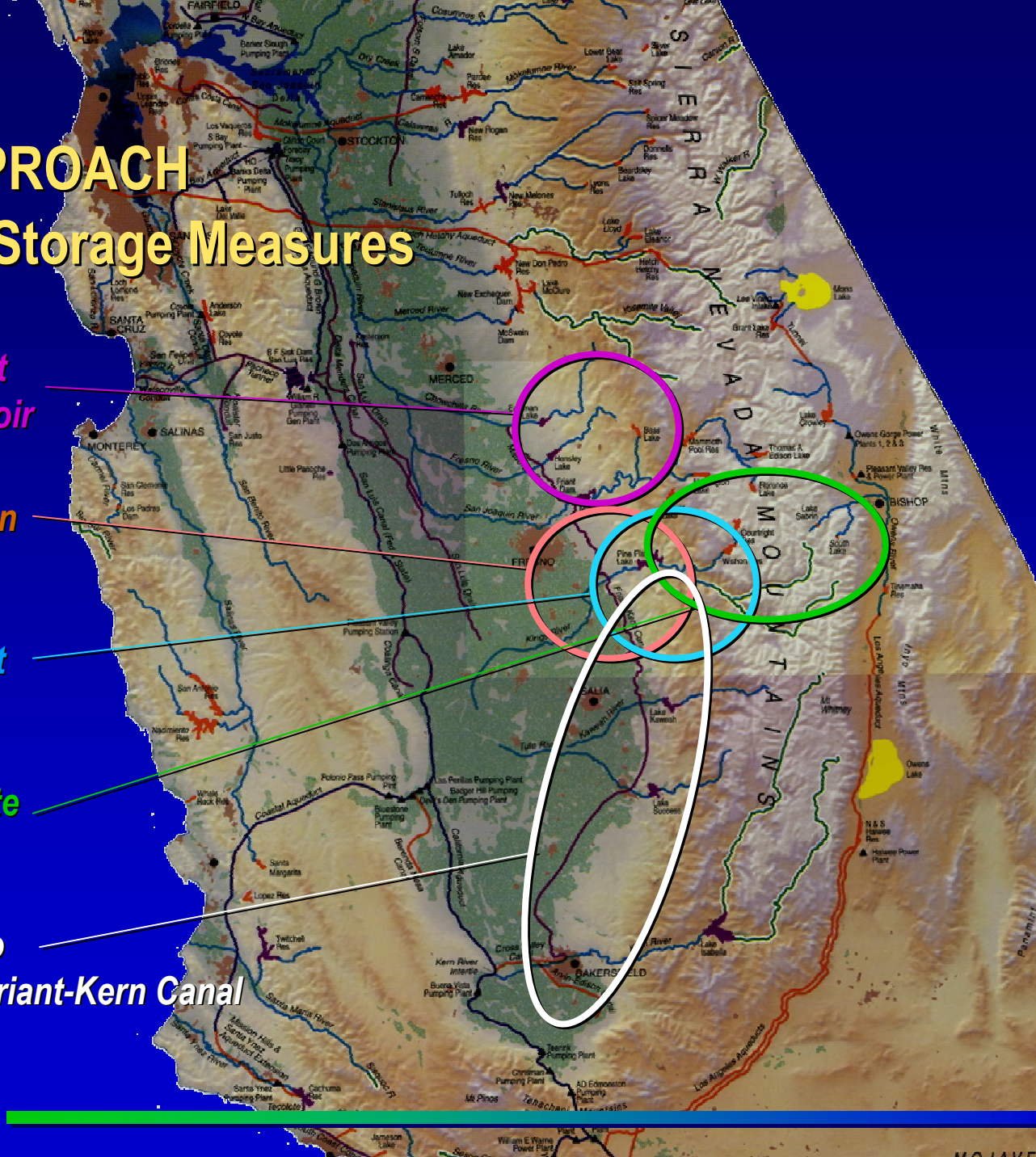
*Off stream storage at  
Montgomery Reservoir*

*Off stream storage on  
Fine Gold Creek*

*On stream storage at  
Temperance Flat*

*Modify and re-operate  
upstream reservoirs*

*Additional storage to  
increase supply to Friant-Kern Canal*



# PLANNING APPROACH

## Continuation Criteria

- ◆ **Meet CALFED Objectives**
  - Water Supply Benefits
- ◆ **Consistent with Federal Principles and Guidelines**
  - National Economic Development
  - National Ecosystem Restoration
- ◆ **Consistent with State Planning Guidelines**
- ◆ **Identified Non-Federal Sponsor(s)**

# PLANNING APPROACH

## Phase I Schedule

### ♦ Summer 2002

- Field Reviews
- Describe Existing Conditions
- Develop Without-Project Conditions
- Modify CALSIM II Model
- Identify Storage Measures

### ♦ Fall 2002

- Initial Review of Storage Measures

# PLANNING APPROACH

## Phase I Schedule

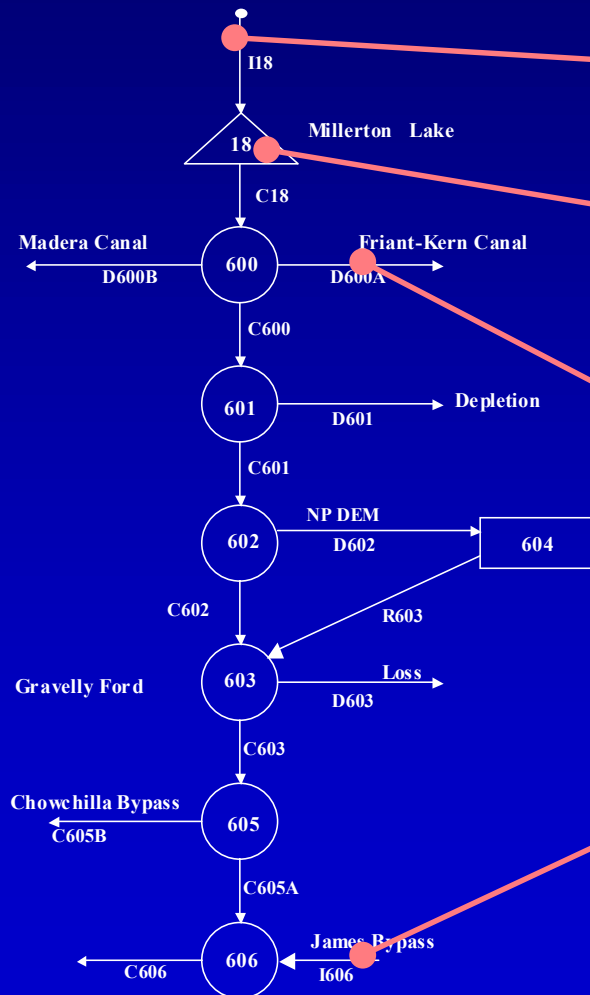
- ◆ **Winter / Spring 2003**
  - Develop Preliminary Alternatives
  - Evaluate Preliminary Alternatives
- ◆ **Summer 2003**
  - Phase I Investigation Report
- ◆ **Fall 2003 (If Warranted)**
  - NOI / NOP for Feasibility Study EIS / EIR

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# HYDROLOGIC MODELING APPROACH

## Existing CALSIM II Features



Millerton Inflow: Preprocessed Flows Based on Historical Records

Millerton Lake: Flood Operation Without Forecast-Based Dynamic Storage Allocation

F-K Canal: Preprocessed Delivery Used as Demand; No Distinction Among Class I, Class II and Section 215 Waters

James Bypass: Preprocessed Flows Based on Historical Records

# **HYDROLOGIC MODELING APPROACH**

## **Proposed CALSIM II Revisions**

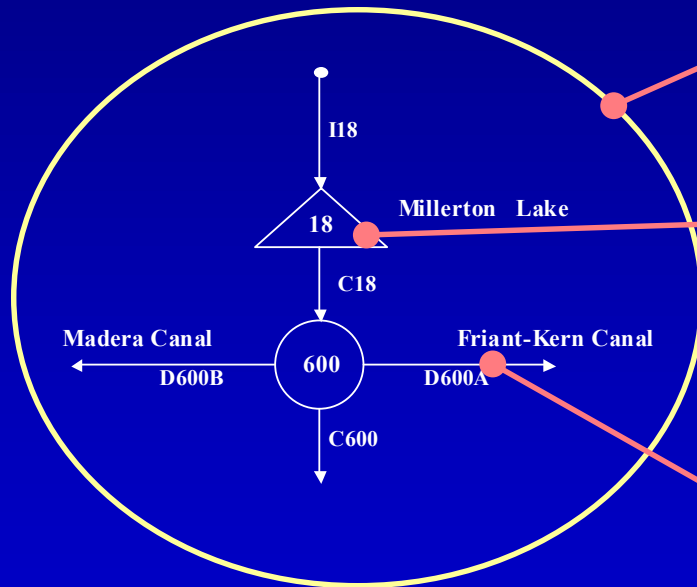
- ◆ **Revise Millerton Lake Operation Logics**
  - ◆ **Add Potential San Joaquin River Facilities**
  - ◆ **Add Potential Merced River Facilities**
  - ◆ **Add Existing and Potential Tulare Lake Basin Facilities**
-



# HYDROLOGIC MODELING APPROACH

## Proposed CALSIM II Revisions

- ◆ **Revise Millerton Lake Operation Logics**



Based on the BASE MODEL Developed Through NRDC/FWUA Recent Study

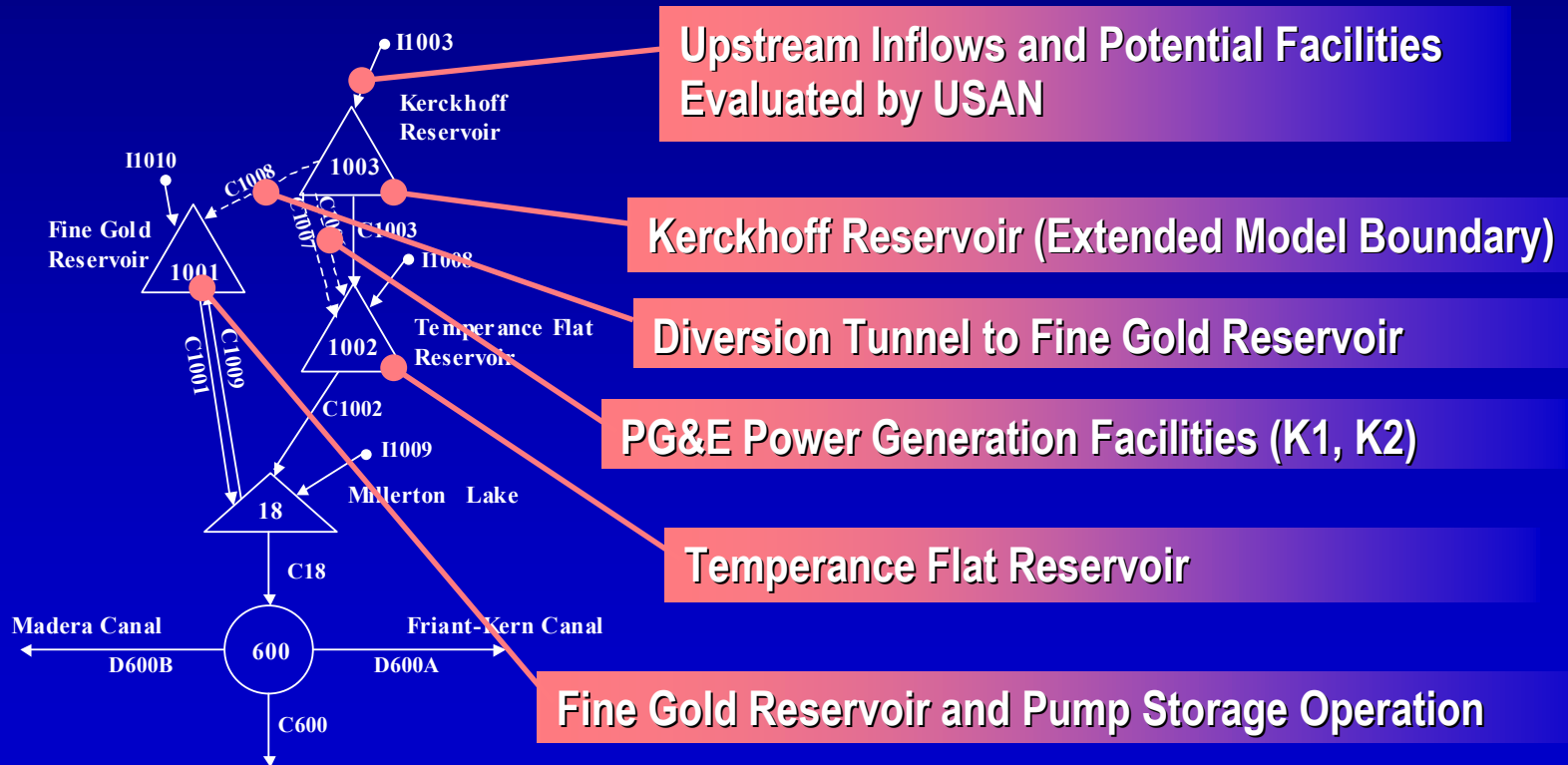
Dynamic Flood Operation Based on USACE's Flood Control Manual

More Realistic Delivery Allocations to Class I, Class II, and Section 215 Waters

# HYDROLOGIC MODELING APPROACH

## Proposed CALSIM II Revisions

### ◆ Add Potential San Joaquin River Facilities



# HYDROLOGIC MODELING APPROACH

## Proposed CALSIM II Revisions

- ◆ Add Potential Merced River Facilities

Existing CALSIM II Features in the Merced River Basin above Dry Creek Confluence

Dry Creek Confluence



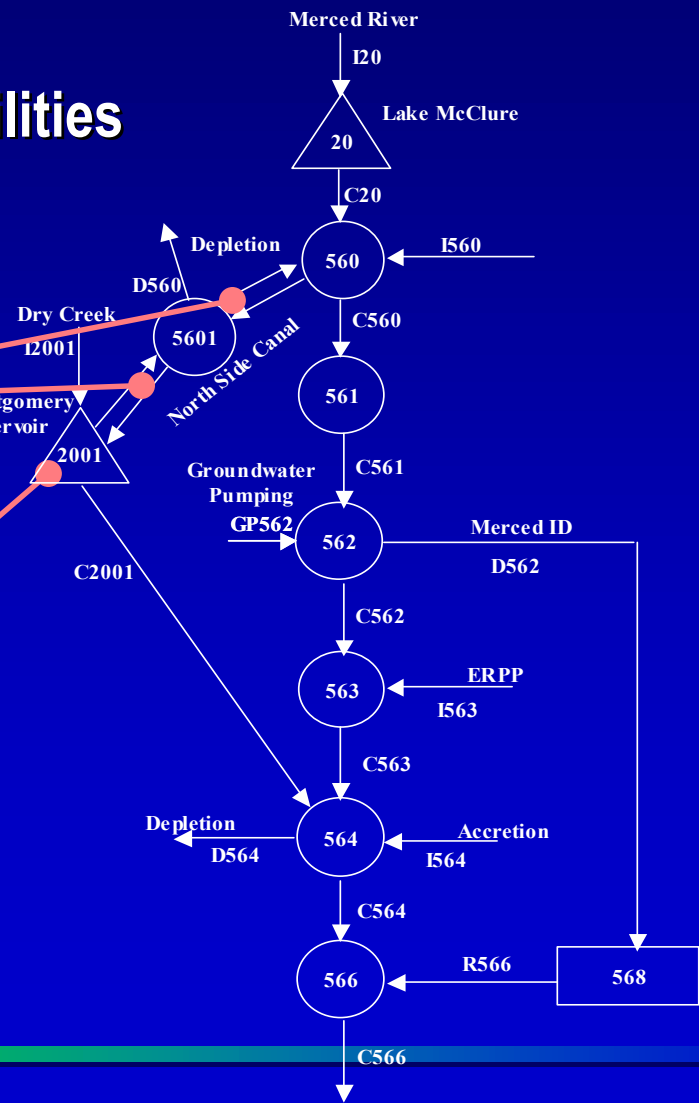
# HYDROLOGIC MODELING APPROACH

## Proposed CALSIM II Revisions

- ◆ Add Potential Merced River Facilities

Two-way Conveyance  
Through North Side Canal

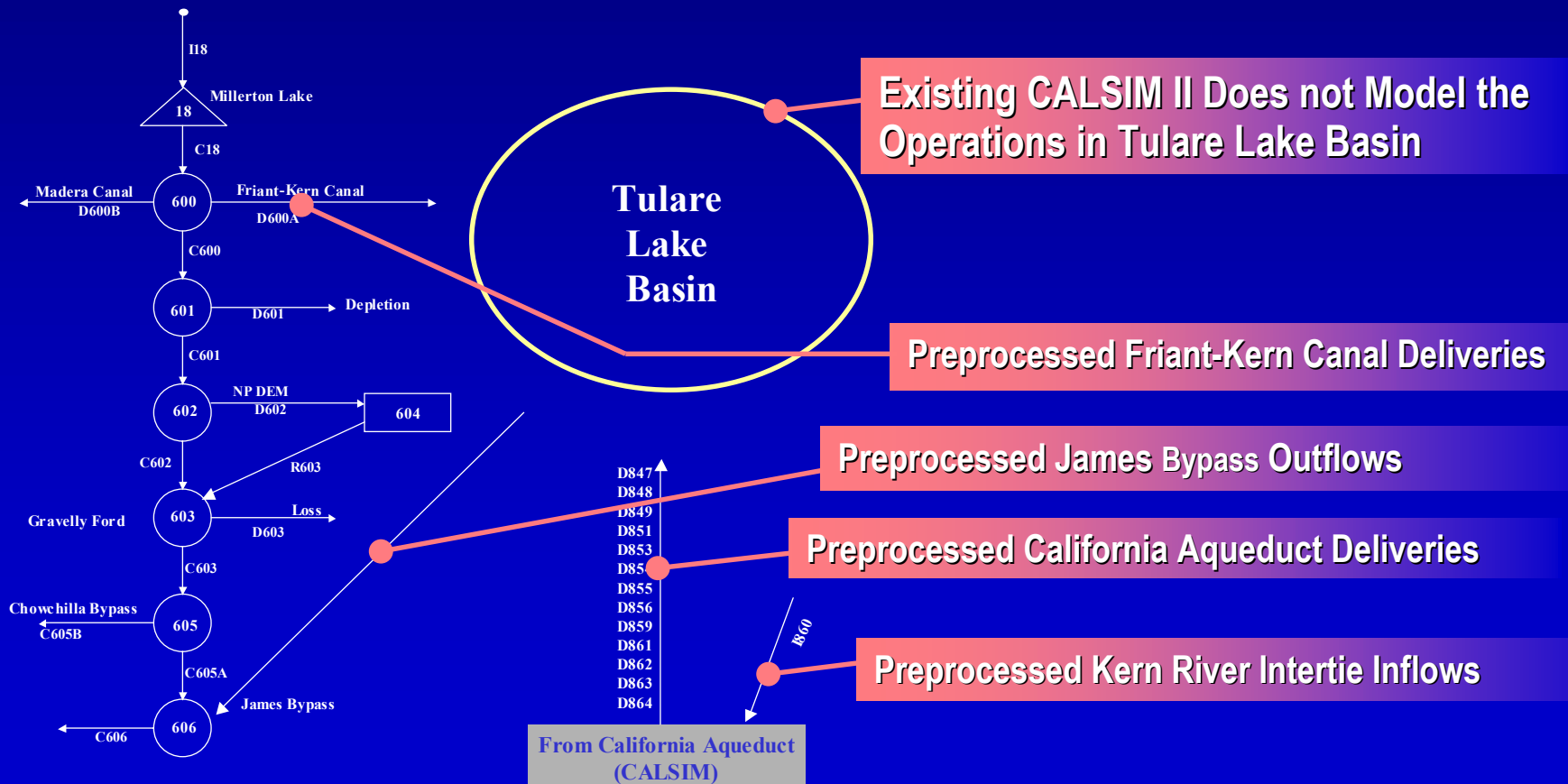
Montgomery Reservoir



# HYDROLOGIC MODELING APPROACH

## Proposed CALSIM II Revisions

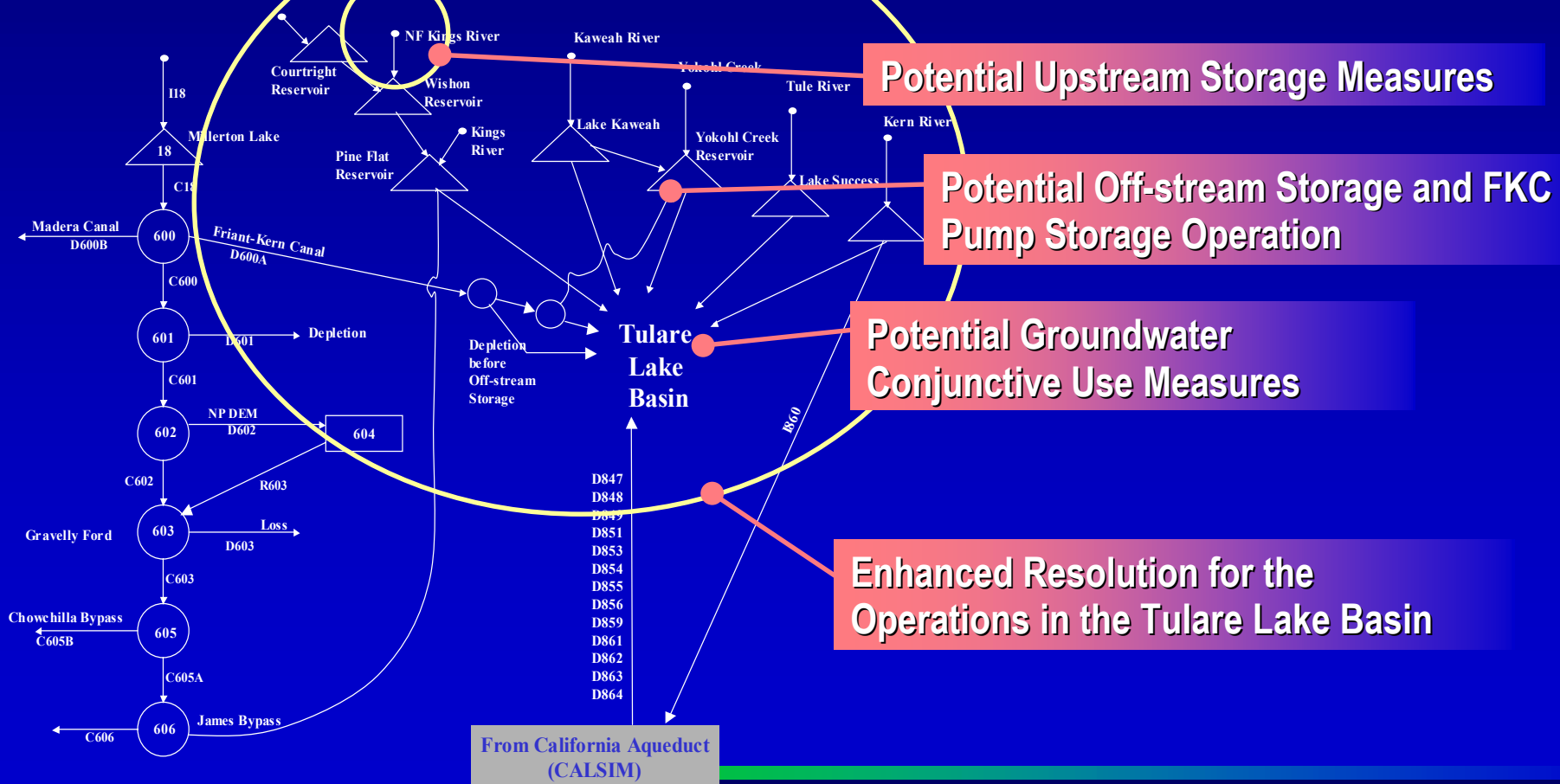
### ◆ Add Existing and Potential Facilities in Tulare Lake Basin



# HYDROLOGIC MODELING APPROACH

## Proposed CALSIM II Revisions

### ◆ Add Existing and Potential Facilities in Tulare Lake Basin



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# TECHNICAL STUDIES IN PHASE I INVESTIGATION

## Surveying and Mapping

- ◆ Recent Aerial Photography
  - 5 - foot contours for reservoir areas
  - 2 - foot contours at potential dam sites
- ◆ Other Existing Information



# TECHNICAL STUDIES IN PHASE I INVESTIGATION

## Storage Site Considerations

- ◆ **Site Features**
    - Access
    - Layout
  - ◆ **Ranges of Sizes**
  - ◆ **Dam Design Options**
  - ◆ **Potential Additional Features**
    - Hydropower
    - Tunnels
-

# TECHNICAL STUDIES IN PHASE I INVESTIGATION

## Cost Considerations

- ◆ **Initial Costs**
  - Construction
  - Borrow
  - Disposal
- ◆ **Annual Costs**
- ◆ **Local Availability of Resources**

# TECHNICAL STUDIES IN PHASE I INVESTIGATION

## Constructability

- ◆ **DSOD Coordination and Approval**
  - Seismic Design Requirements
  - Flood Routing During Construction
  - Spillway Design
- ◆ **FERC Requirements for Power Features**

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# TECHNICAL STUDIES IN PHASE I INVESTIGATION

## Environmental Review

### ◆ Objectives

- Appraisal Description of Existing Conditions
- Potential Impacts due to Storage Site Construction
- Qualitative Mitigation Requirements

### ◆ Approach

- Literature Review
  - Site Observations
  - Focus on construction-related issues
-

# TECHNICAL STUDIES IN PHASE I INVESTIGATION

## Environmental Review

- ◆ **NDDB Review**
  - ◆ **“Gross” Estimate of Habitat Types**
  - ◆ **Likely Effects on Existing Facilities**
  - ◆ **Cultural Resources Issues**
  - ◆ **Unique Environmental Characteristics**
-

# TECHNICAL STUDIES IN PHASE I INVESTIGATION

## Potential Benefits

- ◆ Regional and Local VS Statewide
- ◆ Quantifiable VS Qualitative
- ◆ Potential Benefit Categories
  - Water supply (Ag, M&I, Restoration)
  - Water quality (M&I, Restoration)
  - Hydropower
  - Flood damage reduction
  - Recreation

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